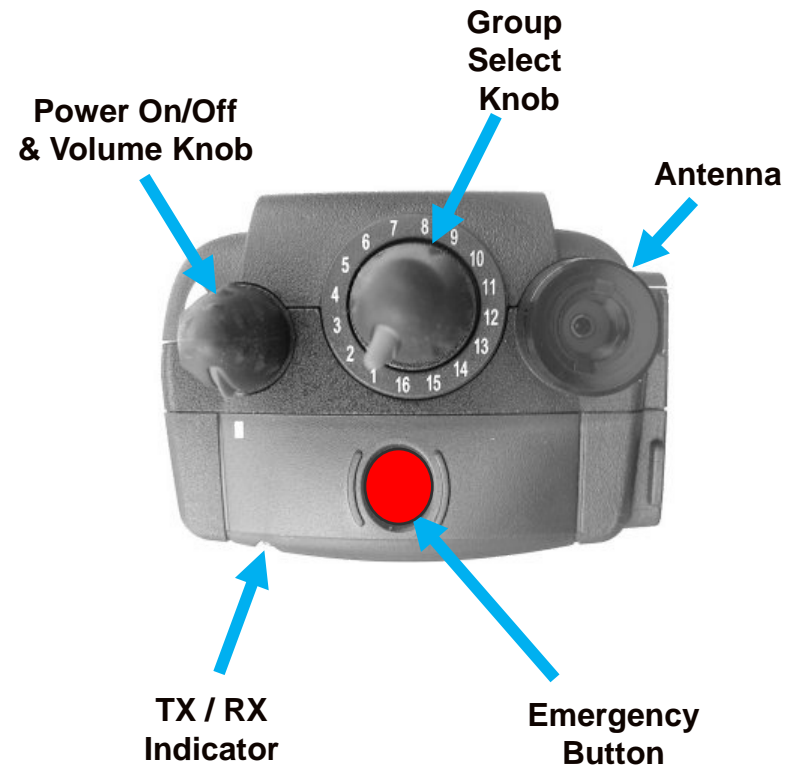


P7150 Scan Model Operation



Front and Top Views



Line 1 & Line 2 Display Indicators

LINE 1: Current System Name (example: TRAINING)
Volume Level (VOL = 10)
Caller Identification (GR 1234)
Low Battery (LOW BATT)
' Who Has Called' (* WHC *)

LINE 2: Current Talkgroup Name (example: TRNG 1)
Call Queued (QUEUED)
System Busy (SYS BUSY)
Call Denied (DENIED)
Individual Call (* INDV *)
Control Channel Scan (CC SCAN)
Wide Area Scan (WA SCAN)
Receive Emergency (* RX EMER *)
Transmit Emergency (* TX EMER *)

LINE 3: Radio Status Icons (*see next page*)

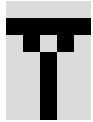
Line 3 Display Status Icons



Radio Status Icons

see next page for explanations of icons

Line 3 Icons



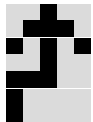
**ON - transmitting or receiving
FLASHING - call queued**



**Battery level
indicator**



**SCAN enabled
(rotates clockwise)**



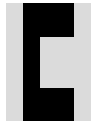
Radio is transmitting



Failsoft mode



**Selected group
in scan list**



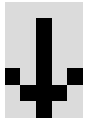
**Radio in special call
select/entry mode (Individual or
Telephone Interconnect)**



**Selected group
Encryption
enabled**



**Selected group
is priority-two scan**



**ON - low power transmit
OFF - high power transmit**



**Selected group
Analog Voice**



**Selected group
is priority-one scan**



**Conventional channel
is enabled with
Channel Guard**

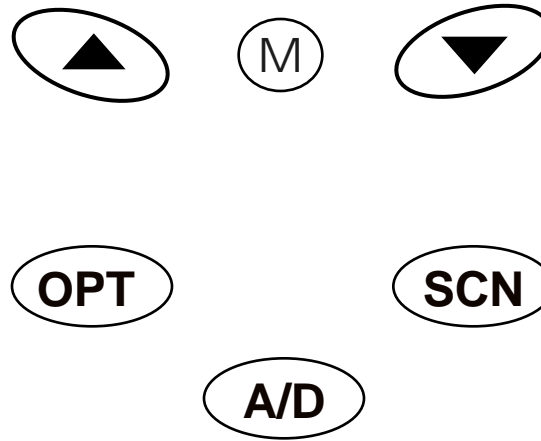


**Selected group
Digital Voice**



**Selected channel
Project 25 Enabled**

Keypad Function Keys



M – Accesses pre-stored menus
Acts as “Enter” key










OPT – Optional key

▲ ▼ – Scrolls through available
systems, groups, or
channels
Changes the selection for an
item within a menu list

A/D – Adds (or deletes) talk groups
or channels from the scan
list

SCN – Turns Scan function on or off

Alert Tones

	Call Originate	short mid-pitched beep (“beep”)
	Autokey	short mid-pitched beep sounding after queued and an open channel is gained (“beep”)
	Call Queued	high-pitched tone (“beep”) sounded when the system places the call request in a queue
	System Busy	three low-pitched tones (“dut-dut-dut”), only with I-Calls
	Call Denied	low-pitched tone (“bomp”) sounded when the radio is not authorized on the selected system
	Timing Out	five short high-pitched warning tones (“beep..”) followed by a low-pitched tone (“bomp”)
	Key Press Alert	short tone “beep”= access; low -pitched “bomp”= denial
	Low Battery	short quiet mid-pitched tone (“beep”)
	Missed I-Call	telephone ring sounded when an incoming individual call is not answered

Basic Radio Operation



Locking/Unlocking the Keypad



Press and release the M key and then press and release the upper Option button on the side of the radio to LOCK or UNLOCK the keypad

All front keypad keys except the M key are locked

Emergency Button, PTT, and both knobs function normally

Changing Talk Groups



Turn the GROUP SELECT knob to select a group

Group names appear on Line 2 of the display

Making a Group Call



Select the group you want to reach

Group names appear on Line 2 of the display

Push-to-Talk (PTT)

Indicator will light red while transmitting (*orange if transmitting in encrypted mode*)

Receiving a Group Call



**The caller's Radio ID or alias
appears on Line 1 (ex. 1234)**

**Group that is transmitting
appears on Line 2**

**Indicator will light green while
receiving**

**If in SCAN and you want to talk
to the caller, change to the
group that appeared in the
display**

PTT to respond

Changing Systems

Use the ▲ ▼ keys to select another system

System names appear on Line 1 of the display



Adjust Display Backlight Brightness



Press the M key to access the menu

Use either of the arrow keys ▲ ▼ to position the ">" cursor at BCK LGHT

Press the M key to select the Backlight menu

Use the arrow keys ▲ ▼ to adjust the brightness level of the display backlight from "Off" up to 6

Press the M key to select the new setting

Adjust Display Contrast



Press M to enter the Menu mode

Use the ▲ ▼ keys to find and select CONTRAST

Press M a second time

CNTRST = 1, 2, 3, or 4 will appear in the display with the current setting

Use the ▲ ▼ keys to change the contrast level

Press M a third time to store the change

Changing the Power Level



If enabled, the transmit power level of the radio can be adjusted

Press the **M** key to access the menu

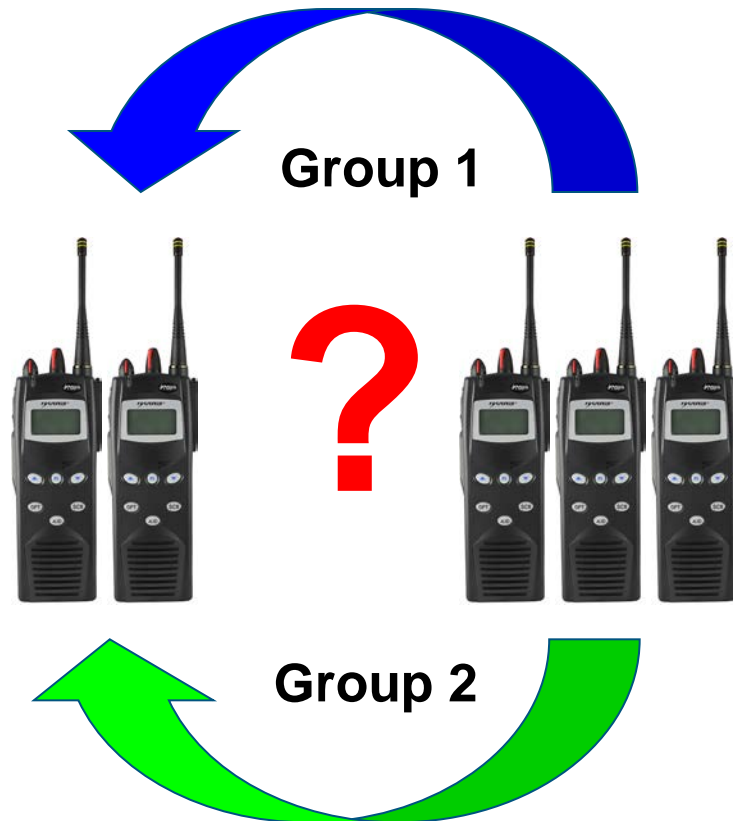
Use either of the arrow keys ▲ ▼ to position the “>” cursor to TX POWER

Press the **M** key to toggle between High and Low power

POWER=HIGH or **POWER=LOW**

will appear momentarily in the display

Call Scanning



Group Call Scanning

The radio is able to monitor multiple groups, but the radio can only receive one group at a time

The radio can scan only those groups on a “Scan List”

This list can be programmed by the user, or

The list may be directly programmed into the radio by the Network Administrator

Turning the Scan function On or Off can be:

Fixed in programming by the Network Administrator, or

Controlled by the radio user

The radio can have up to two “Priority Talk Groups” designated

Priority 1 Talk Group

Priority 2 Talk Group

Priority Talk Groups can be assigned by the radio user, or they might be fixed in the programming by the Network Administrator

The radio will be extracted from listening to a scanned call if a call with a higher priority is received

Turning SCAN On/Off



Press the SCN key to turn on the Scan function

The ► icon rotates clockwise to indicate the radio is scanning.

Press SCN again to turn off the Scan function and the icon ► will disappear.

Establishing a Scan List

**To Scan, you must have a Scan List,
and to create or edit your Scan List,
you must have Scan turned off**

**If necessary, turn Scan off by
pressing the SCN key**

**The ► indicator will disappear from
the display**



Adding Talk Groups to the Scan List



Turn the Group Select knob to the group you wish to add to your Scan List

Press the A/D key once to add the group to the Scan List

III will appear in the display indicating the addition of the group to the Scan List

Turn to the next group and repeat the process to add that group to your Scan List

NOTE – If “FIXD LST” appears instead of the 3- bar icon, a fixed scan list has been programmed into the radio, and you will not be able to change it

Creating a Priority 2 Talk Group



Turn the Group Select knob to the group you wish to make your Priority 2 for scanning

Press the A/D key once to add the group to the Scan List

III bars appear in the display

Press A/D again to prioritize the group to Priority 2

II bars appear in the display to indicate this is the Priority 2 group

NOTE – You can only have one “Priority 2” talk group in your scan list – changing another talk group to “Priority 2” will cause the previously -designated talk group to revert to a non-priority scanned group (III)

Creating a Priority 1 Talk Group



Turn the Group Select knob to the group you wish to make your Priority 1 for scanning

Press the A/D key once to add the group to the Scan List (III)

Press A/D again to prioritize the group to Priority 2 (II)

Press A/D again to prioritize the group to Priority 1

I bar is displayed to indicate this is the Priority 1 group

NOTE – You can only have one “Priority 1” talk group in your scan list

Deleting Talk Groups from the Scan List



Turn the Group Select knob to the group you wish to delete from your Scan List

Press the A/D key until none of the scan priority bars (|||, ||, or |) are displayed

The talk group will no longer be scanned until you replace the group in your Scan List

||| = in scan list – no priority
|| = in scan list – Priority 2
| = in scan list – Priority 1
no bars = not in scan list

Radio Care

Troubleshooting Tips & Battery Replacement



Troubleshooting Tips

Issue	What do you do?
Any talk group or system configuration or structuring (<i>fleet mapping</i>) issue, or any RF coverage issues	Contact your management to report the issue
Any physical radio equipment issues	Contact your management to report the issue
Any failure of the radio or any error code appears in the display that is not explained	Contact your management to report the issue
Slight delay in audio	All digital communications have a slight delay in audio <i>Only noticeable when radios are in very close proximity</i>

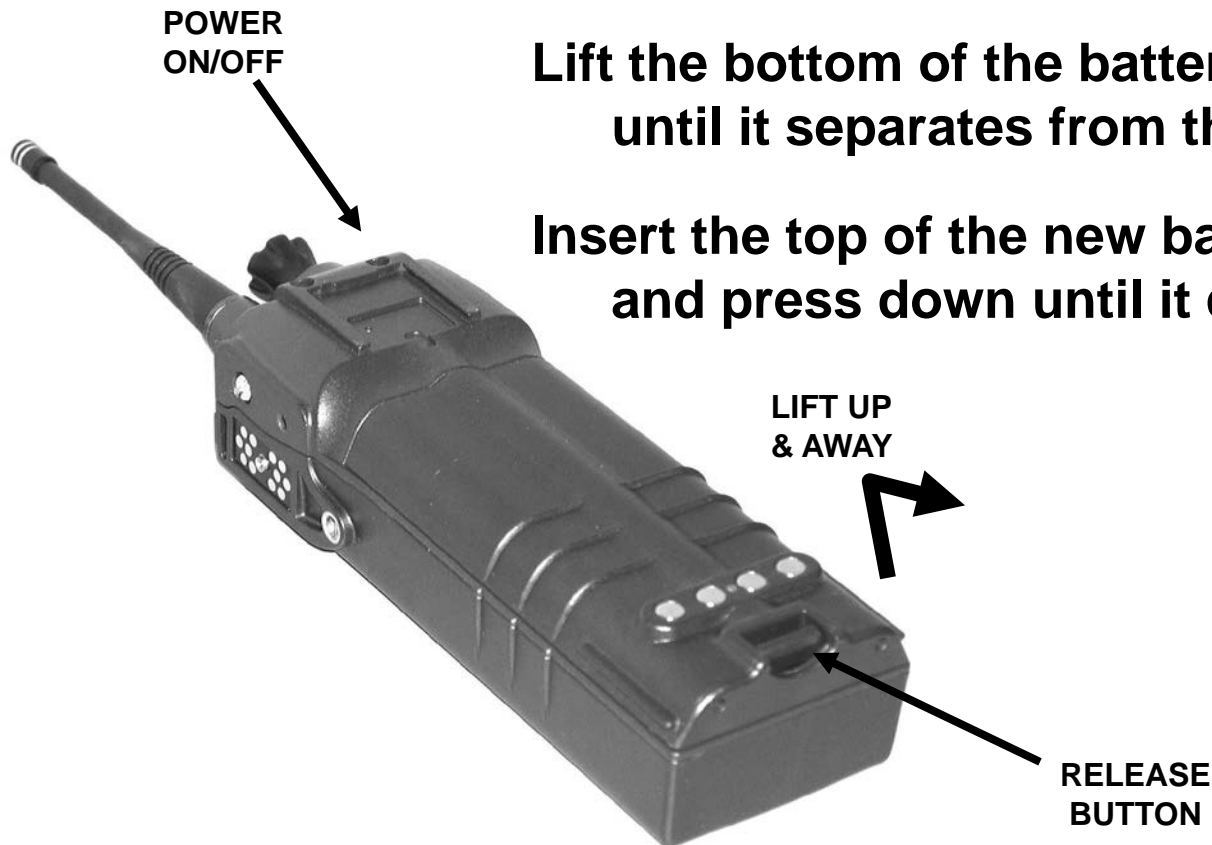
Changing the Battery

Before changing the battery, turn the radio off

Press the battery release button on the bottom of the battery

Lift the bottom of the battery pack up and away until it separates from the radio

Insert the top of the new battery onto the radio and press down until it clicks in place



Battery Charging Information



**P7100 Series Radios Rated Battery Life
(at 5% Tx, 5% Rx, and 90% standby):**

NiCd: 8 hours (1600 mAH)

NiMH: 11 hours (2400 mAH)

Battery Charging Indications (Typical charger)

Slow Red Flash – PreCharge (10 minutes max)

Extremely Discharged

Cold battery

Solid Red – Charging

~ 1 Hour NiCd

~ 2 Hours NiMH

Solid Green – Ready / Trickle Charge

Red / Green Flash – Battery temp too hot

Remove and let cool before attempting to charge

Fast Red Flash – Error

Remove and Reinsert





M7100 Scan Model Mobile Radio User' sGuide for CWIRS

Training Session Notes

assuredcommunications®



Trunked Radio System

Project 25

Interoperable digital radio system standard

**Intended for all public safety LMR bands
(VHF, UHF, and 800 MHz)**

Developed Jointly by:

TIA

Association of Public-Safety Communications Officials (APCO)

**National Association of State Telecommunications Directors
(NASTD)**

**Various agencies of the Federal government (FED) in the early
90's to improve spectral efficiencies**

TIA/EIA Standard in 1999. Under TIA/EIA-102



Project 25 Benefits

Key benefits sought by the user community:

- Competitive procurement of equipment
- Interoperability of equipment
- Spectrum efficiency
- User-friendly operation equivalent to today's public safety equipment and common across all bands, system configurations, services, and manufacturers



* SAFETY ITEMS *

- DO NOT...operate the mobile radio when someone is outside the vehicle within two feet of the antenna. This is a recommendation from OSHA that applies to any type of radio transmitter such as a cellular telephone, CB radio, our old radio system, or our new radios.**
- DO NOT...operate the mobile radio if any of the antenna connectors are loose. This is a basic safety precaution. If the antenna cable or connectors are loose, please place a service call for repair.**
- DO NOT...operate the mobile radio near or in an area where blasting is taking place. Anyone using radio controlled explosives must post signs. If you see a caution sign about blasting in the area, you must turn your radio off. This applies to any radio equipment capable of transmitting: phones, CBs, etc.**
- DO NOT...operate the mobile radio in an explosive atmosphere. The radio is an electrical device with switches that can cause an explosion in an explosive atmosphere. If you can operate your vehicle or any power tools, it is safe to use the radio.**

Operating Rules and Regulations

The Federal Communications Commission sets all rules for two-way radio use. All users of two-way radio equipment should be familiar with these basic rule requirements.

It is a violation of FCC rules to interrupt any distress or emergency message

Any use of profane or obscene language is prohibited

It is against the law to send false call letters or a false distress or emergency message

All messages must be brief and limited to the business need

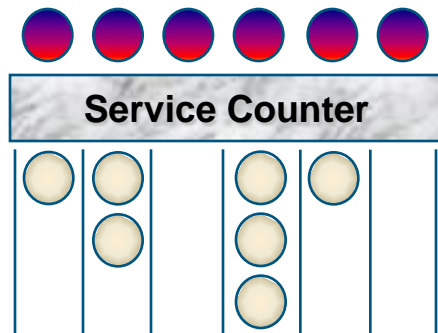
It is a violation of FCC rules to send personal messages, unless in an emergency

The FCC requires that radio systems be identified by use of the assigned Call Letters – *the radio system does this automatically*

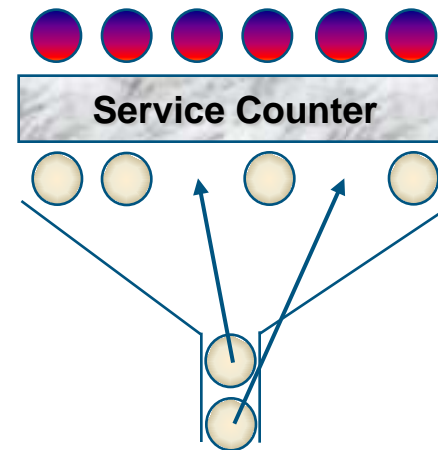
Conventional vs. Trunked

Computerized Assignment of Channels

Conventional



Trunked

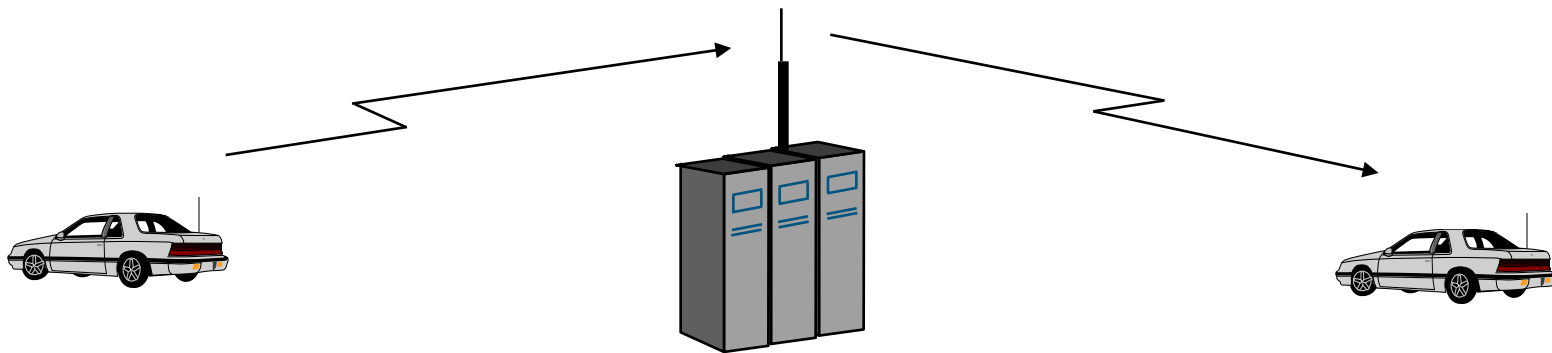


Service Employee



Customer

Why Trunking?



Trunking: Improves **spectral efficiency**
Relieves **the user from managing the channel**
Encourages **cross agency / shared communications**
Establishes **communications privacy**
Encourages **private communications**
Discourages **eavesdropping by scanners**
Establishes **“queuing” rather than “waiting”**
Enables **priority use during busy times**

Trunked Radio System Features

Digital Control Channel

Multiple Working Channels

< 0.5 Second Access

Group & Individual Voice Calls

Logical ID (LID) for each radio

Late/Delayed Entry

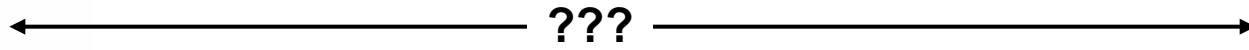
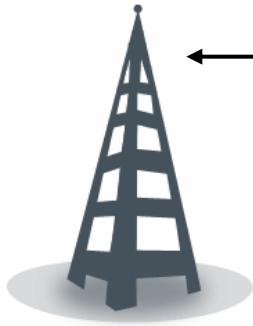
Emergency Calls

Queuing with Priority

Unit Enable/Disable

Wide Area Coverage

Communication Range



Many factors affect range:

Site Location

Urban Clutter

Reflections / Multipath

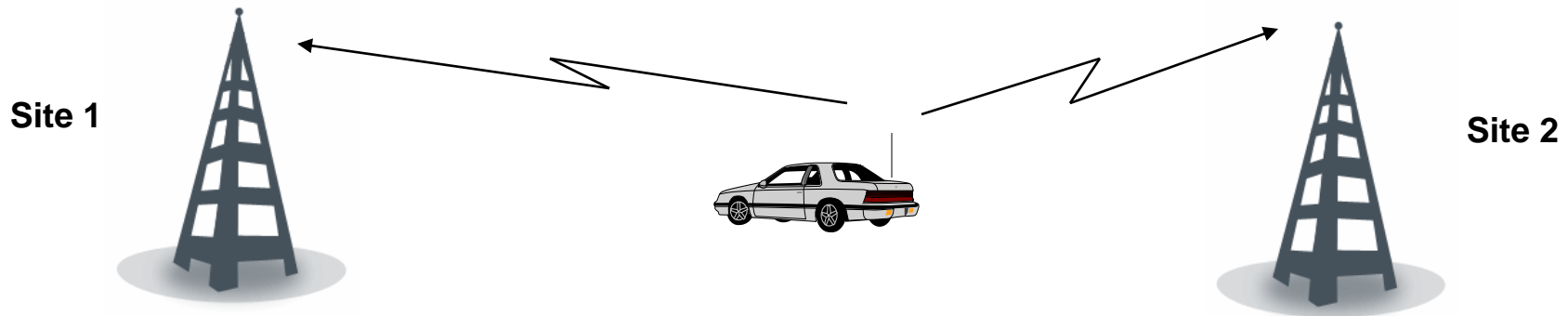
Ducting over Water

Heavy vegetation

Weather

Frequency

Multisite - What the Radios Do



Units inform the System of their location:

Each time the Radio is powered up

Each time a System selection is made

Each time a Group selection is made

When Radio detects a high bit error rate on the Control Channel,

Radio will look for another site (algorithm programmed in radio),

Automatically switches to new site when criteria met

M7100 SCAN MODEL KEY FEATURES

2-Line, 16-Character Alphanumeric Display

Back-lit Keypad

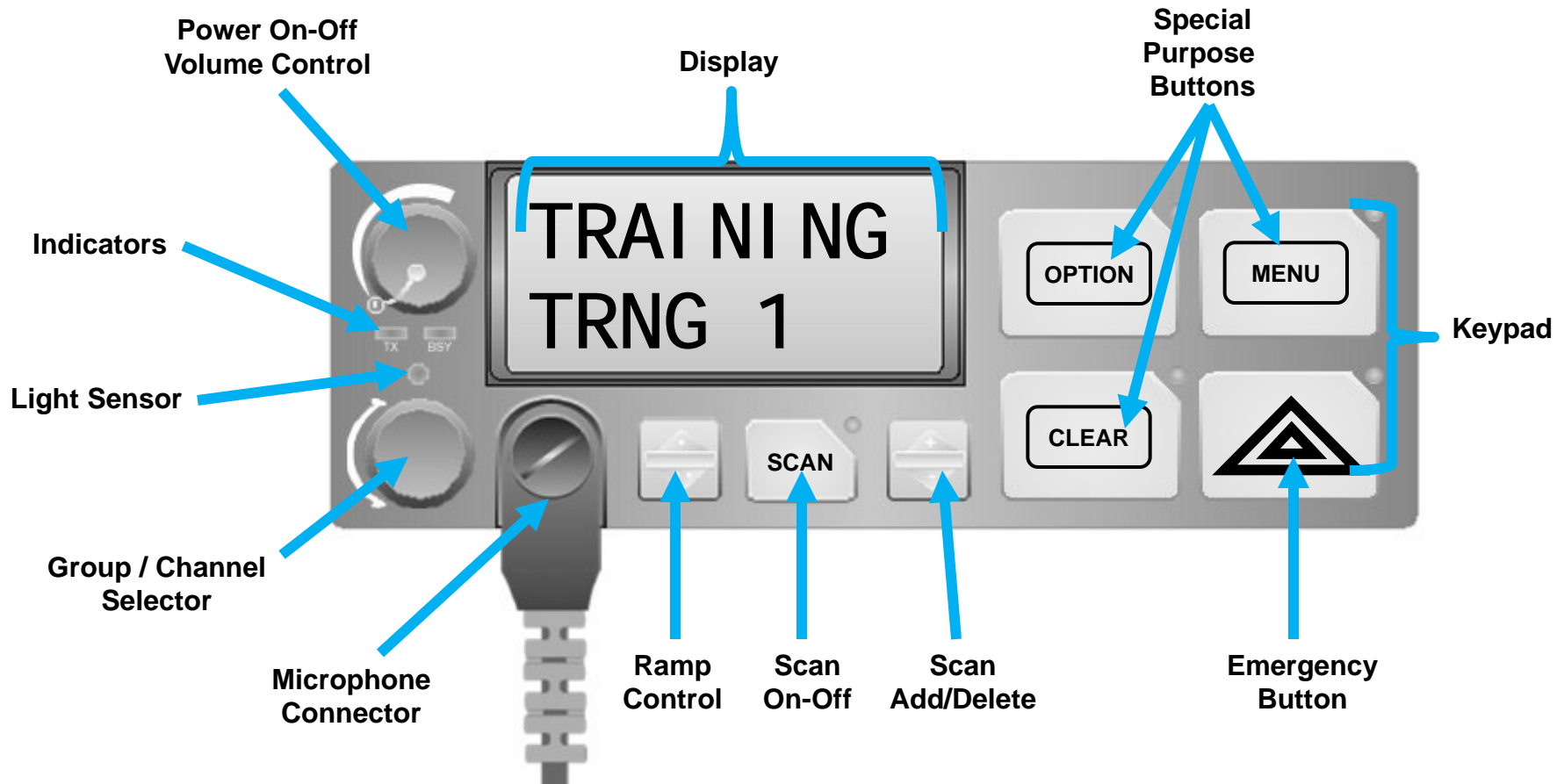
LEDs on Keypad Function

Custom Scan Capability

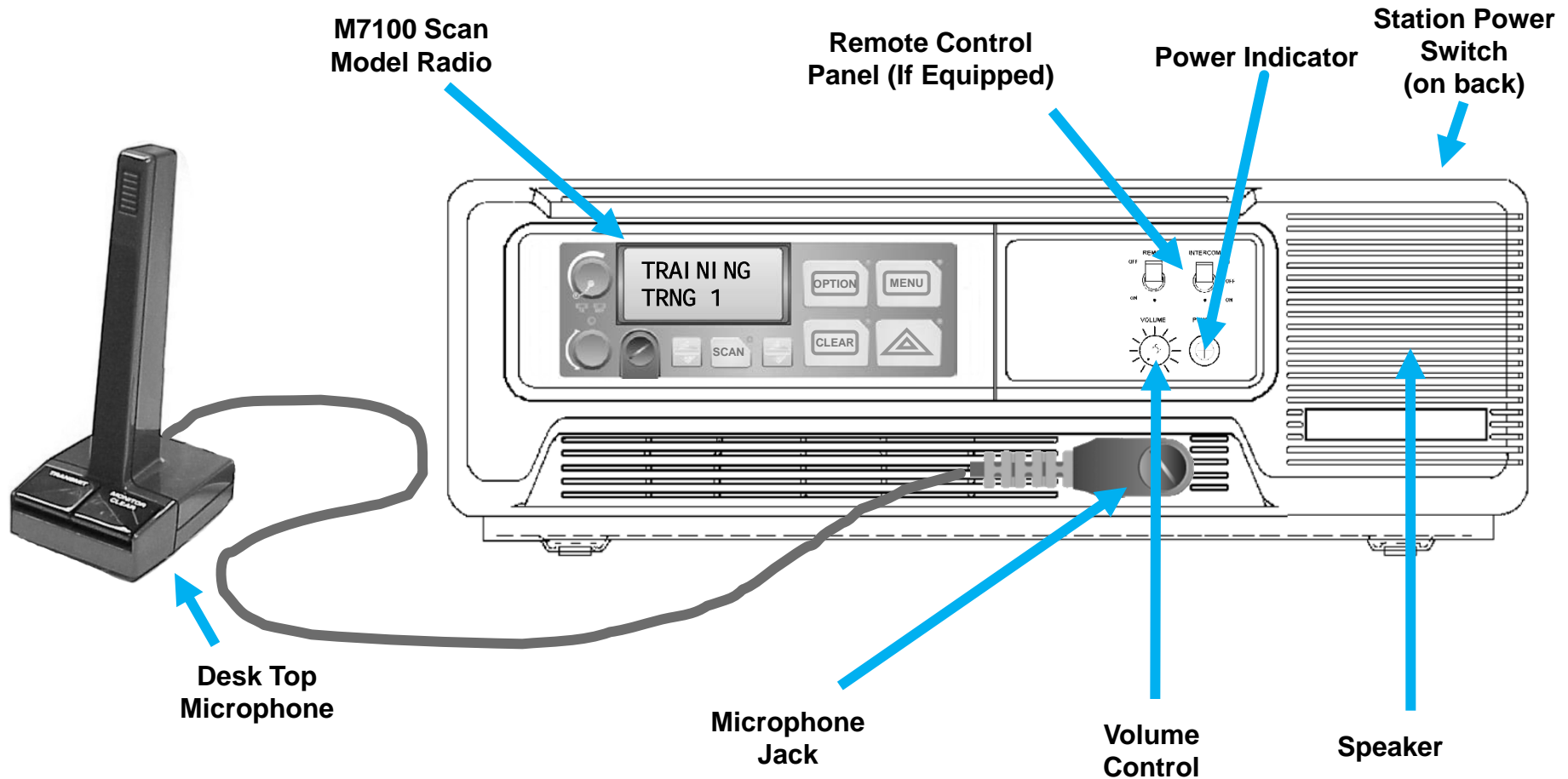
No Stepping on Someone's Transmission



M7100 Control Head Functions



M7100 Desk Top Station











Display Indicators

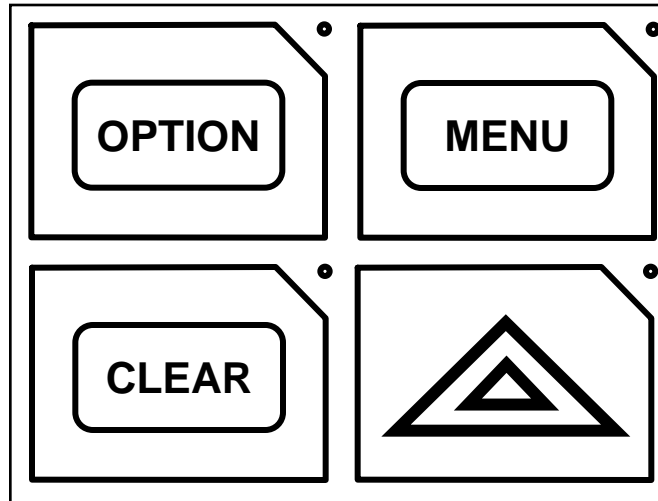
LINE 1: Current System Name (example: TRAINING)
Volume Level (VOL = 10)
Caller Identification (GR 1234)
Low Battery (LOW BATT)
' Who Has Called' (* WHC *)

LINE 2: Current Talkgroup Name (TRNG 1)
Call Queued (QUEUED)
System Busy (SYS BUSY)
Call Denied (DENIED)
Individual Call (*INDV*)
Control Channel Scan (CC SCAN)
Wide Area Scan (WA SCAN)
Receive Emergency (*RX EMER*)
Transmit Emergency (*TX EMER*)

Alert Tones

 Call Originate	short mid-pitched beep (“beep”)
 Autokey	short mid-pitched beep sounding after queued and an open channel is gained (“beep”)
 Call Queued	high-pitched tone (“beep”) sounded when the system places the call request in a queue
 System Busy	three low-pitched tones (“dut -dut-dut”), only with I-Calls
 Call Denied	low-pitched tone (“bomp”) sounded when the radio is not authorized on the selected system
 Timing Out	five short high-pitched warning tones (“beep..”) followed by a low-pitched tone (“bomp”)
 Key Press Alert	short tone “beep”= access; low-pitched “bomp”= denial
 Missed I-Call	telephone ring sounded when an incoming individual call is not answered

Keypad Functions



OPTION - toggles a programmed feature on/off

CLEAR - clears the display

MENU - accesses the menu list and acts as an “enter” key



- used to declare an emergency

Basic Radio Operation

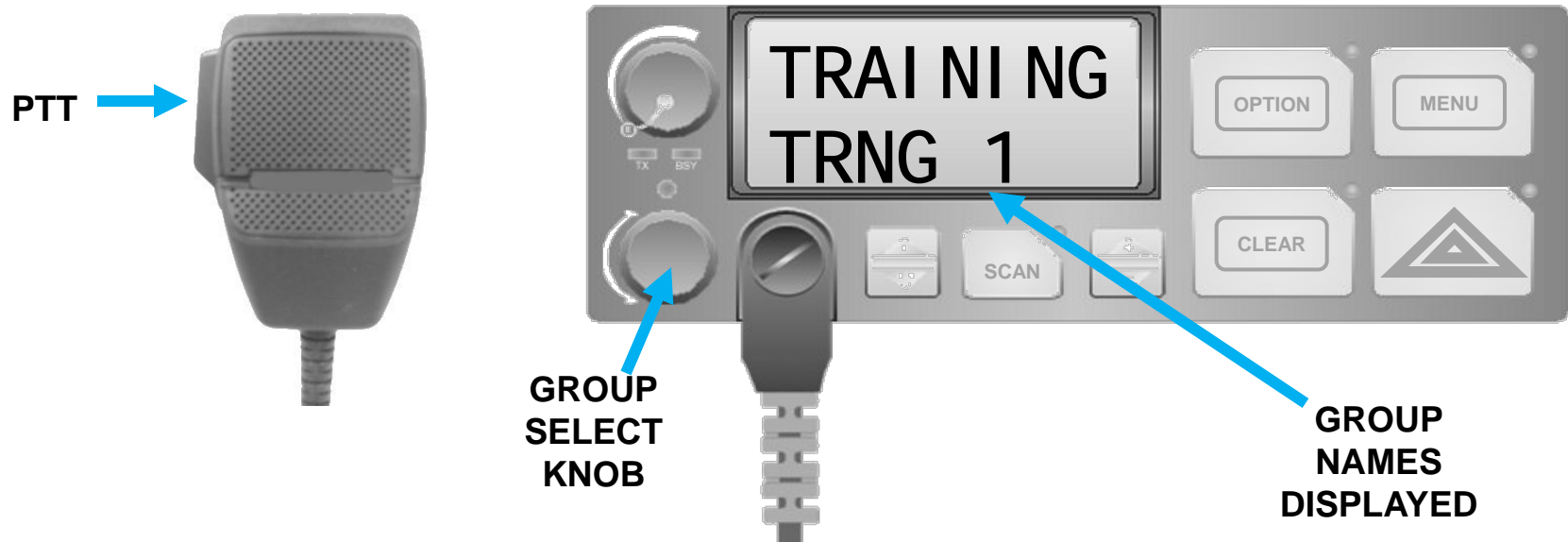


Talk Group Selection



Turn the GROUP SELECTION knob to select a group
Group names appear on Line 2 of the display

Making a Group Call

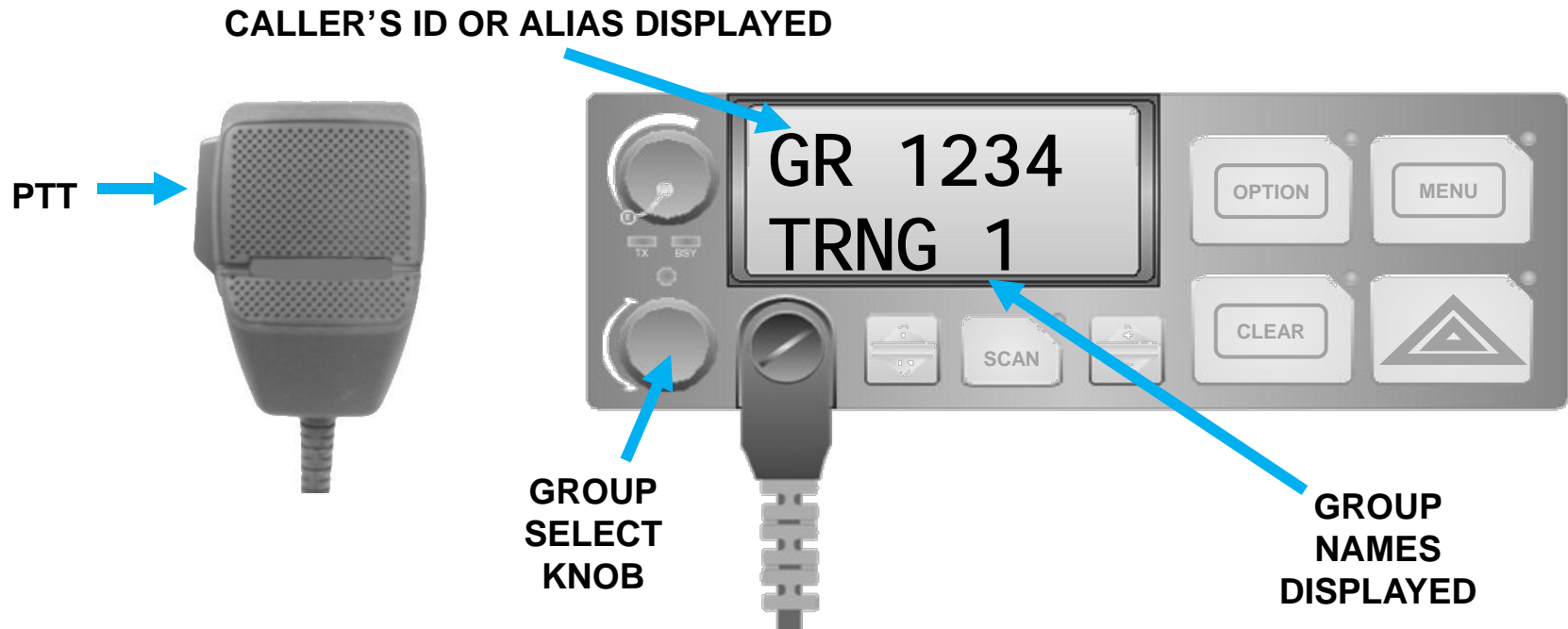


Select the group you want to reach

The Group names appear on Line 2 of the display

PTT

Receiving a Group Call



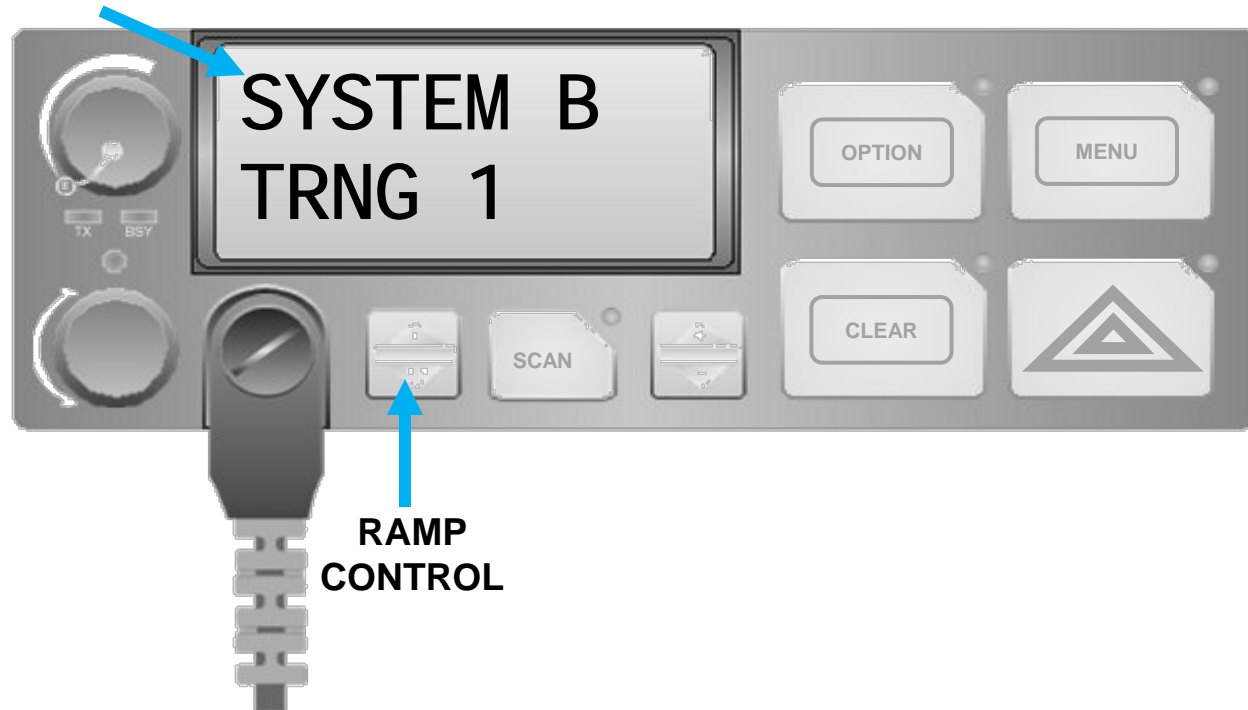
Line 1 displays the caller's Radio ID or alias

Line 2 displays the talk group (*if Scan is on, the talk group displayed may be different than your selected talk group*)

PTT to respond when the caller finishes (*if in Scan and you want to talk to the caller, change to the group that appeared in the display*)

Changing Systems

SYSTEM NAMES DISPLAYED



Toggle the RAMP CONTROL button to select a system
System names appear on Line 1 of the display

Changing the Display Brightness

BRIGHTNESS LEVEL DISPLAYED



Push the MENU key

Use the RAMP CONTROL to find the BCK LGHT

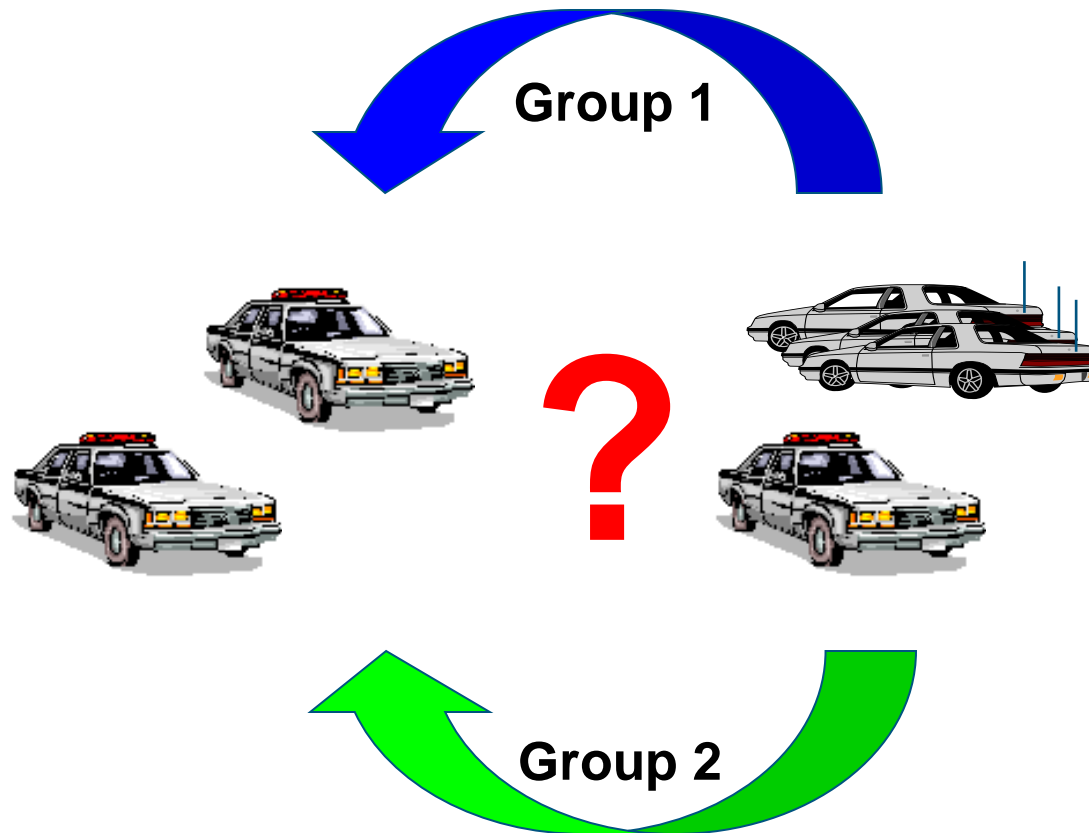
Push MENU key again

BCKL = 1, 2, 3, 4, 5, 6 will appear in the display with the current setting

Use the RAMP CONTROL to change the brightness increasing in intensity from 1 to 6

Press the MENU key

Call Scanning



Group Call Scanning

The radio is able to monitor multiple groups, but the radio can only receive one group at a time

The radio can scan only those groups on a “Scan List”

This list can be programmed by the user, or

The list may be directly programmed into the radio by the Network Administrator

Turning the Scan function On or Off can be:

Fixed in programming by the Network Administrator, or

Controlled by the radio user

Radio can have up to two “Priority Talk Groups” designated

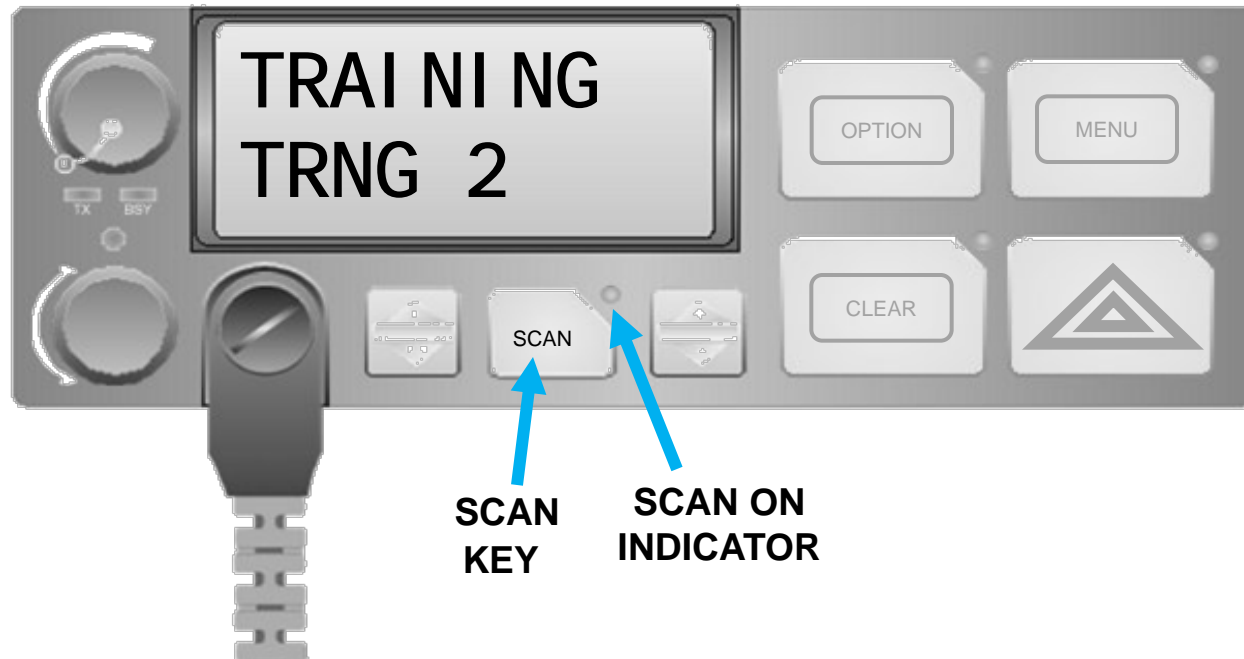
Priority 1 Talk Group

Priority 2 Talk Group

Priority Talk Groups can be assigned by the radio user, or they might be fixed in the programming by the Network Administrator

The radio will be extracted from listening to a scanned call if a call with a higher priority is received

Turning SCAN On/Off



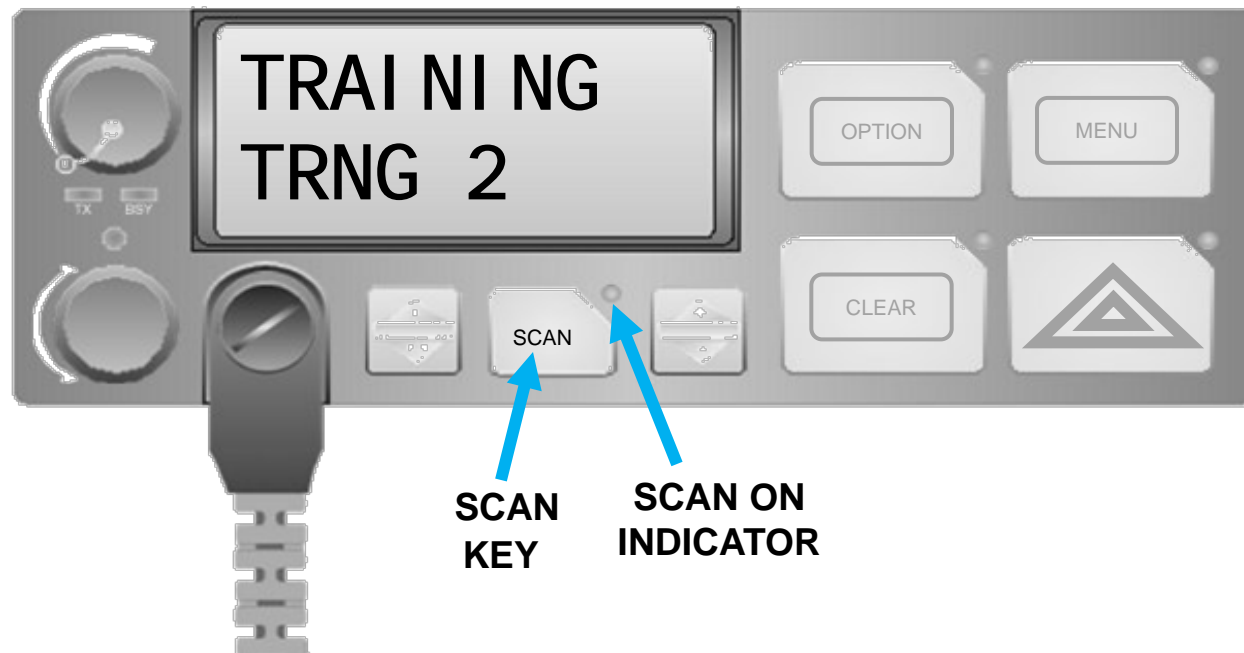
Press SCAN to turn on the scan function (any group in the scan list will be scanned)

The light above the SCAN key indicates SCAN on/off

Press SCAN again to turn off the scan function (light off)

Note: The microphone must be on hook for the scanning to function

Establishing a Scan List

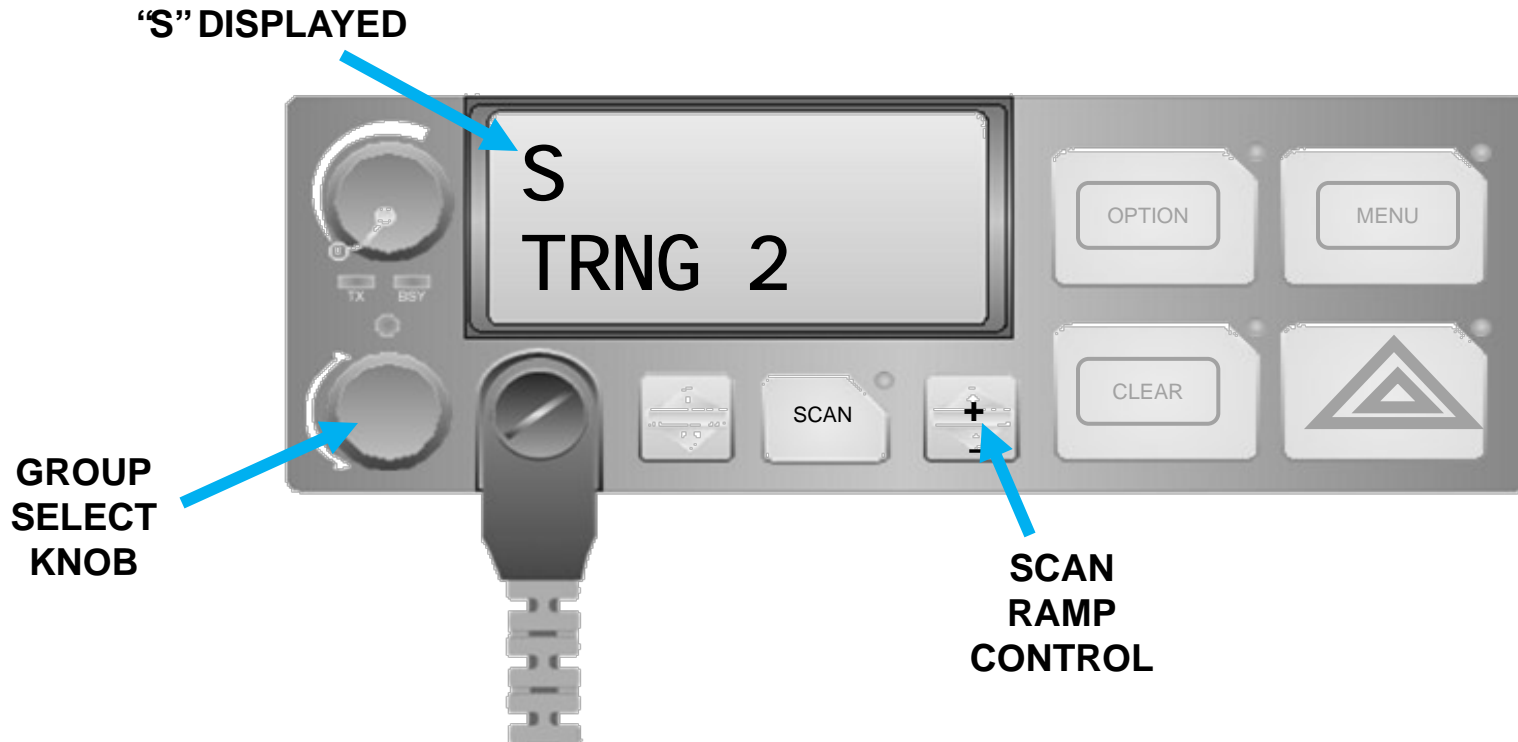


To Scan, you must have a Scan List

To create a Scan List (or modify an existing Scan List) you must have the Scan function turned off

Press the SCAN button to turn scan off (the scan light is off)

Adding a Group to the Scan List

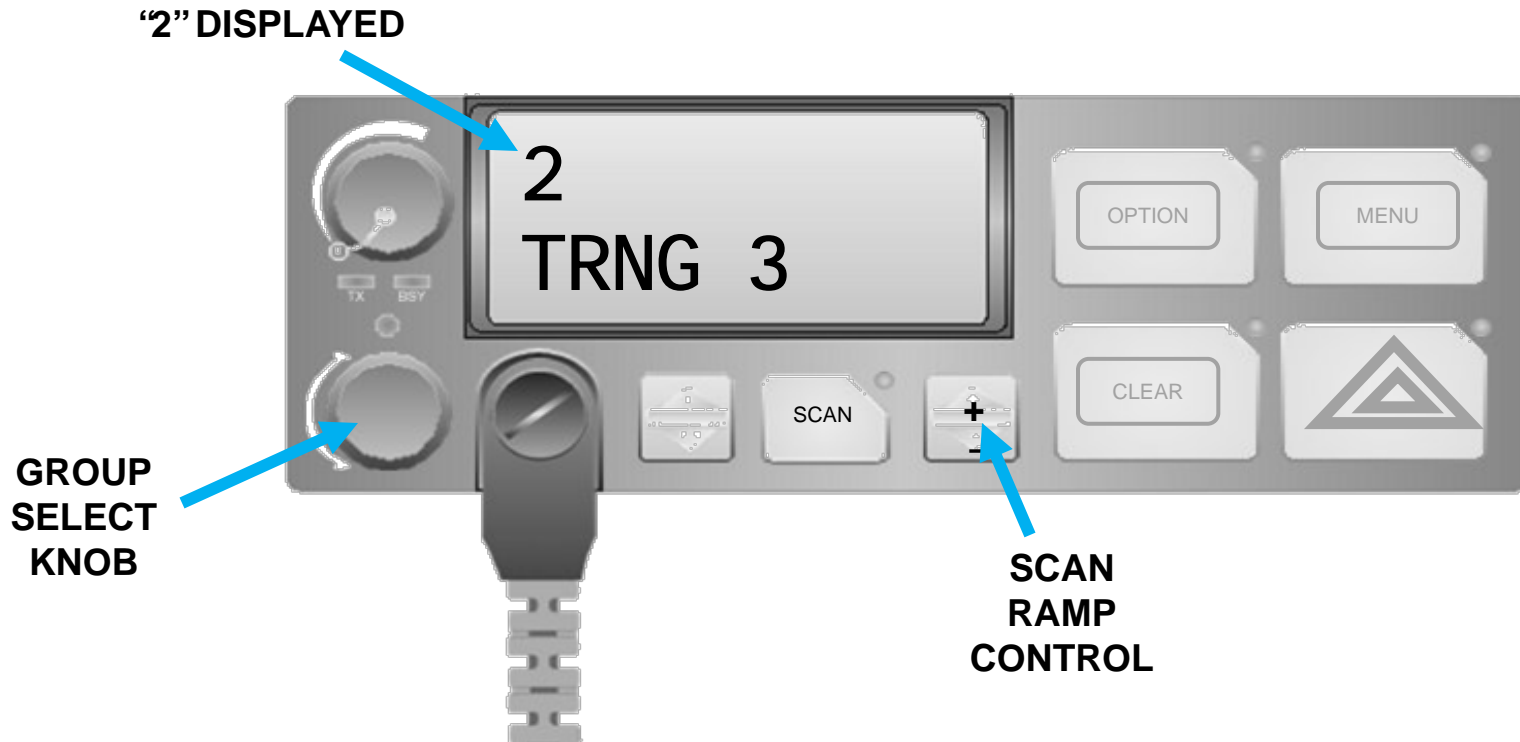


Select the group you wish to scan

Press scan ramp up (+) to add the group to the scan list

An "S" will appear briefly to indicate the talk group has been added to the scan list

Creating a Priority 2 Group

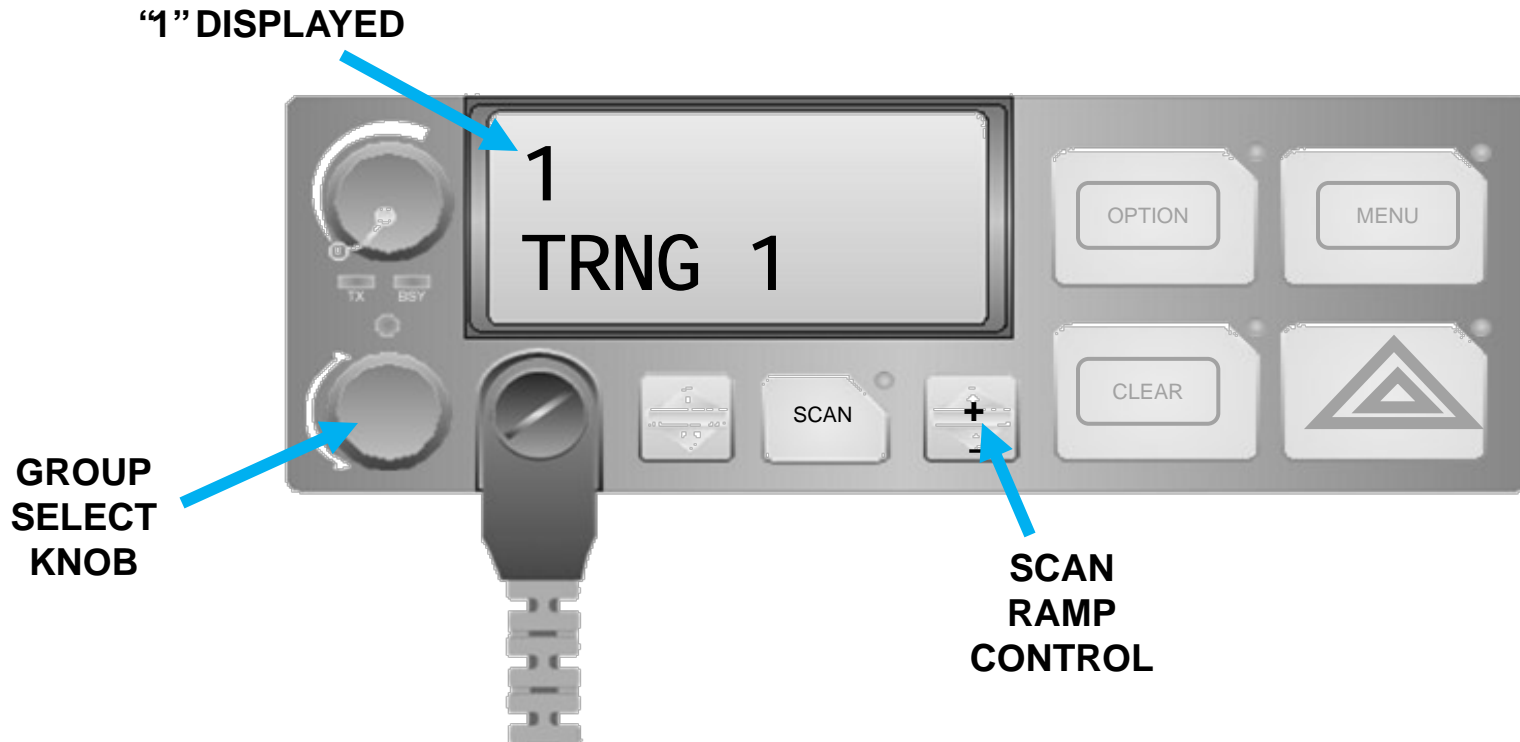


Select the group you wish to prioritize

Press scan ramp up (+) to prioritize the group to “Priority 2”

An “2” will appear briefly to indicate the talk group has been prioritized in the scan list

Creating a Priority 1 Group



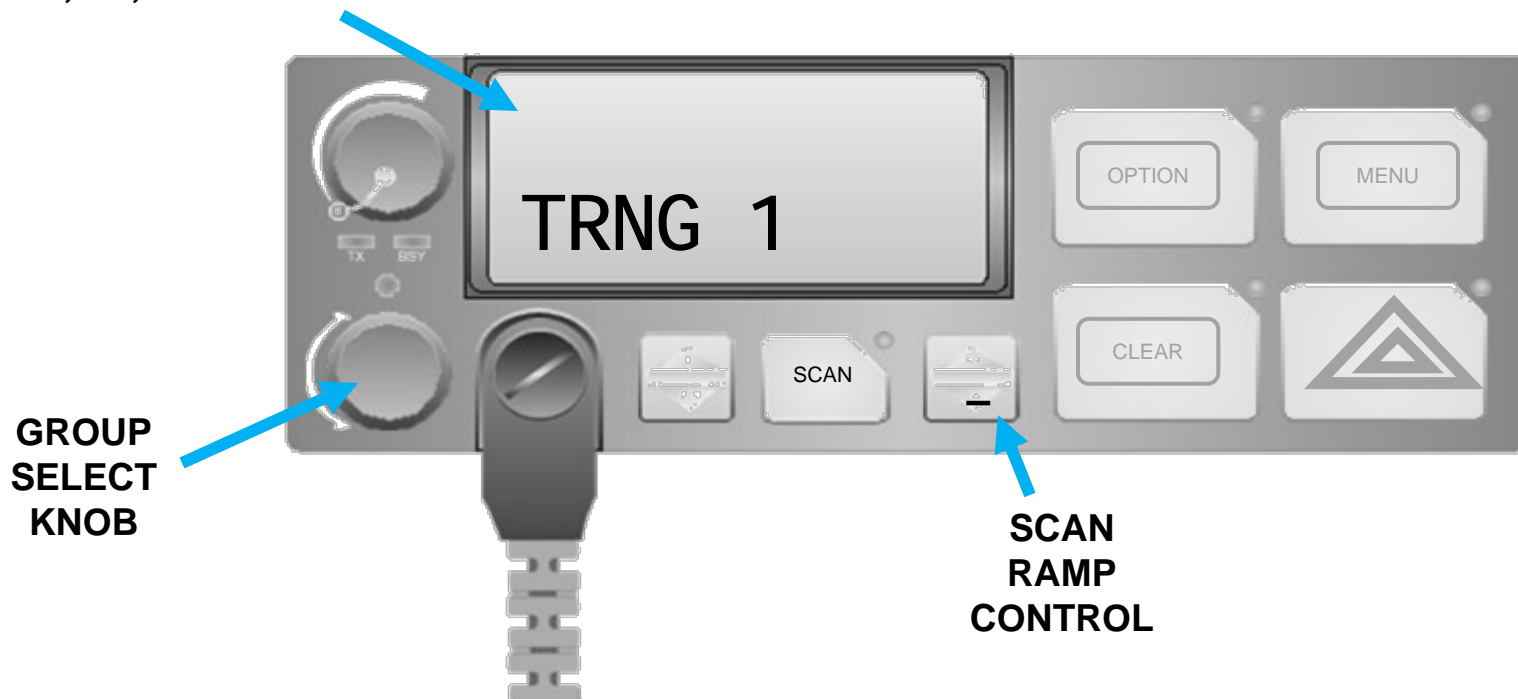
Select the group you wish to prioritize

Press scan ramp up (+) to prioritize the group to "Priority 1"

An "1" will appear briefly to indicate the talk group has been prioritized in the scan list

Deleting Groups from a Scan List

“S”, “2”, or “1” DISAPPEARS



Select the group you wish to delete from the Scan List

Note – Make sure Scan is turned OFF (SCAN Light is off)

Press scan ramp down (→) to delete the group from the Scan List

Notice the S, 1, or 2 disappears from the display

Radio Care

Troubleshooting Tips



Troubleshooting Tips

Issue	What do you do?
Any talk group or system configuration or structuring (<i>fleet mapping</i>) issue, or any RF coverage issues	Contact your management to report the issue
Any physical radio equipment issues	Contact your management to report the issue
Any failure of the radio or any error code appears in the display that is not explained	Contact your management to report the issue
Slight delay in audio	All digital communications have a slight delay in audio <i>Only noticeable when radios are in very close proximity</i>